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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/663,757

09/17/2003

Eiji Hayashi

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7590

07/19/2006

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EXAMINER

BOES, TERENCE

ART UNIT

PAPER NUMBER

3682

DATE MAILED: 07/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/663,757	<b>Applicant(s)</b> HAYASHI, EIJI	
	<b>Examiner</b> Terence Boes	<b>Art Unit</b> 3682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 5-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1,2, and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation "...loaded raceway..." in claims 1,2, and 15 renders the claim indefinite. What is the raceway loaded with? Is applicant referring to the plurality of balls already recited as being disposed in a raceway or is applicant referring to the raceway being loaded by a force?

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,2,4 and 15, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Bohnhoff (USPN 3,170,336).

Bohnhoff discloses:

Re clm 1,2,4,15

- A screw shaft (10) including a spiral-shaped screw groove (10a,10b)  
formed in an outer peripheral surface thereof

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- A nut (12) movably fitted with the screw shaft and including a screw groove formed in an inner peripheral surface thereof so as to correspond to the screw groove of the screw shaft
- A plurality of balls (14) rollably disposed in a loaded raceway formed between the two screw grooves
- At least one side cap (16) mounted on a circumferential surface (see figs 1 and 3) of the nut and including a ball circulation passage (22a, 22b) for scooping up the balls rolling along the loaded raceway in a direction coincident with the lead angle of the two screw grooves and returning the balls to the loaded raceway
- Two screw grooves are respectively formed as multiple thread screws (10a,10b) and one of the side caps (16) is disposed on each of the multiple threads (10a, 10b see figs 2 and 3).

Re clm 2

- The nut includes a plurality of ball circulation circuits (27a,27b,10a,10b) each formed by the loaded raceway (10a,10b) and the ball circulation passage (22a,22b)

Re clm 4

- Wherein the circulation movements of the balls in the plurality of ball circulation circuits are carried out by the side caps (16,16') respectively disposed on associated ball circulation circuits.

Re clm 15

- At least one side cap (16) mounted on a circumferential outer surface of the nut and including a ball circulation passage substantially extending in a longitudinal direction of the screw shaft (see dotted line in fig1, fig 3 C3/L5-25 especially lines 11-13)

***Response to Arguments***

3. Applicant's arguments filed 06/21/2006 have been fully considered but they are not persuasive.

Applicant argues:

1. The side cap of Bohnhoff is located on an axial end face of the nut and not on a circumferential outer surface of the nut.
  - a. In response, the examiner considers the side cap of Bohnhoff (16) to be "mounted on a circumferential surface of the nut" as claimed for the following reasons:
    - i. As can be seen in figure 1 the side cap (16) contacts an outer circumferential surface of the nut.
    - ii. The examiner considers the axial end face, as described by applicant, to be an outer circumferential surface. The surface is considered as an outer surface in that it is external to the bulk material of the nut. The surface is considered to be circumferential in that it is both circular and located radially outward of the shaft. Furthermore, the surface is

considered to be circumferential in that it is located radially outward of bores (19, 27a, 27b)

iii. The side cap is mounted to the nut via screws (18)

For these reasons the side cap (16) is considered to be mounted on a circumferential surface of the nut.

2. Nuts of the type as presently claimed may be directly linked together. A flange is necessary to link together a plurality of Bohnhoff's type nuts.

a. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a flange) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

b. Bohnhoff's end cap structure has a problem that if one of the end caps breaks, all of the balls in the nut will be lost and the ball screw apparatus will not work. In the Claim 1 structure, there are provided multiple ball circulation paths on a single nut using the side cap structure- and one of the side caps is disposed on each of the multiple threads.

i. In response, the examiner notes that Bohnhoff discloses multiple ball circulation paths (27a, 27b) on a single nut

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using the side cap structure (16) and one of the side caps is disposed on each of the multiple threads (see fig. 3)

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terence Boes whose telephone number is (571) 272-4898. The examiner can normally be reached on Monday - Friday 9:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TB  
7/14/06



RICHARD RIDLEY  
SUPERVISORY PATENT EXAMINER